

TASC

TASC's mission is to rebuild and strengthen the foundation of the Christian faith by increasing awareness of the scientific evidence supporting the literal Biblical account of creation and refuting evolution.

Dan W Reynolds, PhD, Chairman
Phil Johnson, MCE, Vice Chairman
Jeff Gift, PhD, Treasurer
Gerald Van Dyke, PhD, Secretary

October 2017

Creation Hermeneutics: The Role of Science

By Dan W Reynolds

As Christians, we believe the Bible is the Word of God without error in the original manuscripts. We trust that God has overseen the preservation of the texts. There are some minor differences among the many available copies, but those differences don't affect any major doctrines. The extant copies are so numerous and similar that what was in the originals is often discernible. The canon of scripture is closed. So we have a reliable Word that we are commanded to study and live by.

The question naturally arises as to how we should interpret scripture. Since scripture is from God, it is absolute truth that is superior to all other ways of knowing, including philosophy and science. Where scripture has spoken clearly, it has the last epistemological word. To understand what scripture teaches on a topic, all the relevant passages must be considered. Scripture can never contradict itself, so our interpretation must be consistent with all the relevant passages. Sometimes the words of a passage must be studied in their original language to understand how the translators dealt with them. Grammar and context must be considered. The type of literature must be discerned—is a passage written in narrative form or something else? Sometimes a particular topic may not be addressed in scripture or it may be alluded to figuratively, allegorically, or even phenomenologically. Phenomenological language can provide an accurate description of how something is experienced but without an intent of a complete physical description.

So how does science fit into biblical interpretation? Jonathan Sarfati, a Messianic Jew, physical chemist, chess champion, and young-earth creationist, echoes Martin Luther when he says science (in Luther's case *reason*) can and should play a *ministerial* role in our understanding of scripture.¹ By this he means science is not excluded nor exalted (magisterial role) *but consulted, but scripture always has the last word*. And there are different types of science. *Operational science* is science that operates in the here and now; it is empirical, experimental science where an investigator can interact with the object of study. Observations are made, hypotheses are formulated with associated predictions, experiments are designed and carried out to test the hypotheses, predictions and results are compared, hy-

potheses are disproved or refined, and the process is repeated. Inasmuch as our five senses and the rules of logic can be trusted, operational science is a reliable source of truth. Operational science, which emerged in Christian Europe, has given us modern technology: computers, medicine, aviation, space travel, smart phones, etc. Modern science was founded by Christians who believed that a reasonable and consistent Creator designed a world that was itself intelligible and reasonable. Apparent conflicts between operational science and scripture are rare. In those rare cases where there is a dispute, both our understanding of scripture and the scientific results must be reviewed. Since God is the author of scripture and nature, a harmonious understanding that aligns with both operational science and scripture without compromising the integrity of either must exist and can usually be found.

On the other hand there is *historical or forensic science*. Here we are usually dealing with unrepeatable past events like the creation of the universe, the origin of life, or Noah's Flood. We are not able to experiment directly with the event in question. Hence this type of science gathers all the relevant information in the present and then makes an inference to the best explanation. This type of science is not as reliable as operational science in discerning truth. This is especially true when the scientist involved disallows the best data available, the historical record of the Bible. Modern geology denies the Flood to its own peril since we know for sure a global Flood is a historical fact. In science we must distinguish between empirical results and theories obtained from operational science and the inferences of the historical science. Results from operational science can be treated as reliable data while results from historical science may contain inferences that were derived from faulty assumptions about the past. Hence, in interpreting scripture, we can use the Bible and the data of operational science to provide reliable interpretations, but should be wary of historical science, especially where the Biblical data are ignored.

With this brief background, let's investigate what the Bible has to say about the geometry of the earth, if the earth is stationary or in motion, and if the earth is the center of the solar system and universe.

So what does the Bible say about the geometry of the earth? The Bible says the earth has edges/ends (Deuter-

¹ Sarfati J (2011) *Refuting Compromise*, Second Edition (Creation Book Publishers, Powder Springs, GA, 48

onomy 28:64, Job 28:24), has four corners (Isaiah 11:12, Revelation 7:1), is circular (Isaiah 40:22), and has foundations (1 Samuel 2:8, Hebrews 1:10). Scripture also teaches the earth is placed in a void (Job 26:7), and the boundary between day and night is a circle (Job 26:10). There are other verses, but they don't add much to these ideas. So what are we to make of this? Taken at face value, the Bible would seem to be contradicting itself. How can something have four corners and be circular at the same time? How can something have foundations yet hang upon nothing? Let's consult operational science and see if it can help. We have flown and sailed around the earth. We have seen the earth from space. We know it is a sphere suspended in a vacuum. The shape of the boundary that separates day and night is indeed a circle, as it would have to be for a sphere illuminated from one side by the sun. With this knowledge, then, how can we interpret the verses mentioned above? The verses that talk about the circularity of the earth and its suspension in a void are in complete agreement with our scientific understanding and display the divine inspiration of the text. The references to the "ends of the earth" are likely expressions which simply mean places that are the farthest distances away and everywhere in between. The "four corners of the earth" is doubtless an idiomatic expression simply meaning "everywhere". The "foundations" of the earth most likely refer to the rock supporting the earth's crust and surface, also consistent with 2 Samuel 22:8. Although we are Biblical literalists, we still need to discern between literal and figurative language. Hence we see that the ministerial use of science has helped us interpret the Bible in a way that is consistent with the Bible and science.

Our next questions are related to one another. Is the planet Earth stationary or in motion through space? Is the earth the center of our solar system and universe? Does the earth rotate on its axis? Does the sun and universe orbit a stationary earth? Does the earth orbit the sun? The Bible says that the sun rises (Joshua 12:1, Matthew 5:45) and sets (Joshua 1:4, Mark 1:32), but that the earth is not moved (1 Chronicles 16:30, Psalms 104:5). God even temporarily stopped the sun and moon from moving according to Joshua 10:13. Most passages that refer to the earth moving seem to be associated with earthquakes or God's judgment (2 Samuel 22:8, Psalms 18:7). On the other hand, some have interpreted Job 38:12-14 as referring to the rotation of the earth under the sun.² So does the Bible teach that the earth is stationary and all celestial bodies including the sun orbit the earth every 24 hours? Or is the language used to describe the rising and setting of sun phenomenological—an accurate description without intent of a complete physical description? Most people today accept the heliocentric, sun-centered view of the solar system, yet they still use phenomenological language to describe sunrises and sunsets.

² Henry Morris (icr.org/bible/Job/38) and John MacArthur (*The MacArthur Bible Commentary*, Thomas Nelson, Nashville, TN) take this view.

What does operational science have to offer concerning these questions? We will consider stellar parallax, the Coriolis effect, the speed of light, the Foucault pendulum, and the annual and cyclical shifting of light frequencies of stars as observed from Earth, the phases of Venus, the oblateness of the earth, and the aberration of starlight.

One of the ways we are able to determine distances to neighboring stars is through stellar parallax. Every year, the position of nearby stars can be seen to go through a repeated pattern of change relative to more distant stars (Figure 1).

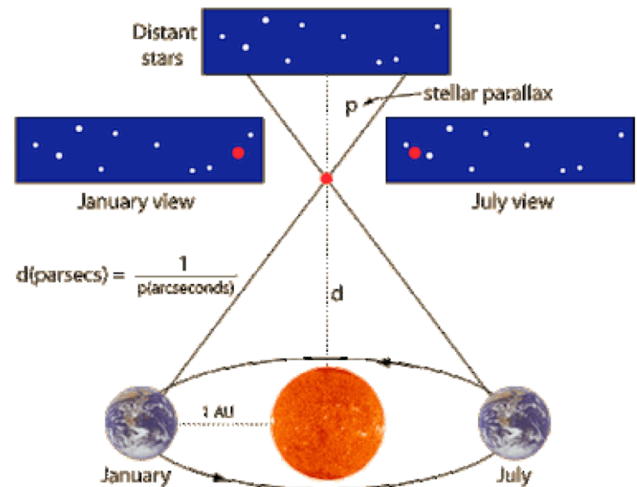


Figure 1. Parallax, from <<http://m.joyceproject.com/notes/080008parallax.html>> Accessed 2017 Sep 12

This change has been used to determine the distance to nearby stars. Assuming a heliocentric model for the solar system, this behavior has been attributed to the change in the position of the earth relative to the stars as it orbits the sun. If the earth is indeed stationary, then parallax would have to be due to the relative motion of the stars. This would mean that the velocities of nearby stars change in a cyclical pattern (speed up then slow down) that just happens to coincide with one earth year, an amazing coincidence without any known physical cause.

The direction of spin of hurricanes, the movement of jet stream in the atmosphere, and the direction of ocean currents such as the Gulf Stream are attributed in part to the rotation of the earth about its axis (Coriolis effect). If the earth is indeed stationary, these effects would have to be attributed to forces beyond the earth, perhaps the moon, sun, other planets, and stars?

If the earth is indeed stationary and at the center of the universe, then the entire universe would be orbiting the earth every 24 hours. This would mean that the different stars and galaxies at greatly varying distances would just happen to have the necessary orbital velocities and at just the right times to remain in the same relative positions as seen from the earth, day in and day out. It would also require that most of the universe is traveling through space

at velocities greater than the speed of light. One of the tenants of Einstein's theory relativity, a well-tested theory, is that nothing can travel through space faster than the speed of light. Einstein's famous equation, $E = mc^2$, means that matter and energy can be converted from one form into another and are hence manifestations of the same thing: matter-energy. Particles accelerated to near the speed of light in atom smashers have increased in *relativistic* mass³ by over 100 fold, but they never reach the speed of light. This is because as the particle approaches the speed of light, its relativistic mass also increases, requiring even more energy to increase the velocity; at the speed of light the relativistic mass would be infinite. If the earth is indeed stationary and the universe orbits it every 24 hours, then the physics in operation outside of our solar system must be different from the physics in operation inside the solar system, but we have no reason to believe that is the case. Various astronomical and physical phenomena appear the same in distant galaxies as what we see in our own galaxy: overall spiral structure, same types of stars, same value for the fine structure constant,⁴ etc.

There is a Foucault pendulum⁵ at the United Nations building in New York. I was privileged to see it when I was a boy. The pendulum consistently sweeps out a complete circle every 36 hours and 50 minutes.⁶ If the earth is rotating on its axis, then we would expect the pendulum to move back and forth through a stationary plane while the earth rotates beneath it. Moreover, we would expect these pendulums to trace out a circle in opposite directions in the northern and southern hemispheres and no circle at all at the equator. This is exactly what is observed. Pendulums on a stationary earth would not be expected to trace out a circle, contrary to evidence.

The wavelengths of starlight from different constellations slightly increase and decrease in an annual cyclical pattern as seen from the earth. This is attributed to the Doppler

³ The equation for relativistic mass is $m = m_0 / (1 - v^2/c^2)^{1/2}$ where m is the relativistic mass, m_0 is the rest mass, v is the velocity of the particle, and c is the speed of light. As v approaches c , the denominator approaches zero and m approaches infinity.

⁴ The fine structure constant (<https://physics.nist.gov/cuu/Constants/alpha.html>) depends on the speed of light, the charge on an electron, the electric constant, and Planck's constant. There is no evidence it is different elsewhere. See: Evans TM, et al. (2014) The UVES Large Program for testing fundamental physics - III. Constraints on the fine-structure constant from 3 telescopes, <https://arxiv.org/abs/1409.1923> Accessed 2017 Sep 04

⁵ Foucault pendulum, https://en.wikipedia.org/wiki/Foucault_pendulum Accessed 2017 Sep 04

⁶ Haringx JA, van Suchtelen H (1957/58) The Foucault pendulum in the United Nations building in New York. Philips Technical Review 19:236-241, http://www.extra.research.philips.com/hera/people/aarts/_Philips_Bound_Archive/PTechReview/PTechReview-19-1957_58-236.pdf Accessed 2017 Sep 05

effect resulting from the orbit of the earth around the sun.⁷ Assuming a heliocentric solar system where the earth orbits the sun annually, for a given constellation, we would expect the wavelength of star light to be blue shifted when the earth moved towards the constellation and red shifted when it moved away. This is what is observed. If the earth were stationary, one would have to say that the stars of the various constellations move towards and away from the earth in an annual cyclic pattern and in the order of the positions of the constellations in the sky. This would be an amazing coincidence without any physical cause.

The observed phases of Venus are in accord with a solar system where Venus orbits the sun, but not the earth. As shown in Figure 2, the full disk of Venus can only be seen if Venus orbits the sun.⁸

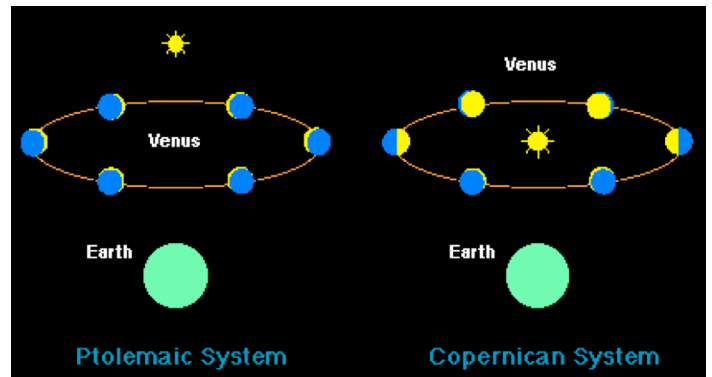


Figure 2. From The Phases of Venus and Heliocentricity: A Rough Guide, in *The Renaissance Mathematicus*, <https://thonyc.wordpress.com/2014/06/09/the-phases-of-venus-and-heliocentricity-a-rough-guide/> Accessed 2017 Sep 12

The earth is not a perfect sphere but an oblate spheroid. The earth has a bulge at the equator. The diameter of the earth at the equator is slightly greater than the diameter measured through the poles. This phenomenon is attributed to the rotation of the earth. Indeed, Venus, although very similar to Earth in size, is much less oblate than the earth because it has a much longer day, 244 Earth days.⁹ Likewise, Mercury is less oblate than the earth as it has a rotation period of 59 Earth days.

Lastly is a phenomenon known as the aberration of starlight. The aberration of starlight refers to the apparent change in position of a star due to the earth's orbiting the sun. It is distinct from the stellar parallax discussed above. Light is composed of packets called photons. Photons have some properties that are like particles. The analogy used to explain aberration of starlight is a person walking in the rain with an umbrella. In the absence of wind and a for a person standing still, rain drops appear to fall

⁷ Motz L, Weaver J (1988) *The Concepts of Science*, Plenum Press, NY, 178

⁸ Phases of Venus, <http://cs.astronomy.com/asy/m/planets/487850.aspx> Accessed 2017 Sep 12

⁹ Strobel N (2013) Astronomy Notes <http://www.astronomynotes.com/tables/tablesb.htm> Accessed 2017 Sep 12

straight down from the sky and strike the umbrella. The raindrops appear to be coming from directly above the observer. Now, if the observer begins to walk in a straight line, the raindrops will appear (to the person walking) to come in at an angle in the direction of motion of the observer. Hence the origin of the rain will not appear to have come from directly above, but at an angle. The same thing happens with the light coming from a star above the orbital plane of the earth. The photons of light from the stars appear to be coming in at an angle due to the earth orbiting the sun, as shown in Figure 3.

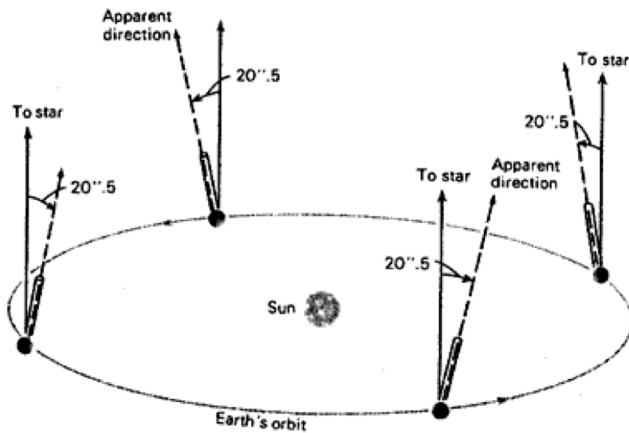


Figure 3. From ASTR 3130 (Majewski) Lecture Notes, <<http://faculty.virginia.edu/ASTR3130/lectures/coordchange/coordchange.html>> Accessed 2017 Sep 12

To be sure, the geocentric and heliocentric models of the solar system can both *describe* the behavior of the planets and other celestial bodies as observed from Earth. The two models can be interconverted by a coordinate system transformation. Kepler's laws of planetary motion accurately describe the motions of the planets but do not *explain why* the planets behave the way they do. In other words, Kepler was able to accurately model the solar system; but without a physical cause, it was purely empirical. Then Newton came along with his law of universal gravitation. Newton showed that the planets behave the way they do *because of gravity*, something inherent to mass. Newton was able to derive Kepler's laws from his own equations on gravity. A heliocentric solar system makes physical sense in light of Newton's law of gravity. The smaller objects (planets) orbit the larger object (the sun). A geocentric model of the solar system may give an accurate description *but without a known physical cause like gravity*.

A widely used principle in science is Occam's razor. It basically says that when faced with multiple possible explanations, the simplest is usually correct. The original geocentric model proposed by Ptolemy, where all the planets and sun orbit the earth, required multiple epicycles to explain planetary retrograde motion among other

things.¹⁰ More recent geocentric models have the earth at the center, but all the other planets orbit the sun while the sun orbits the earth. Geocentric models are more complex than the heliocentric model and don't explain the behavior described. On this basis, Occam's razor points us to the heliocentric model.

There are several other scientific reasons to accept the heliocentric model of the solar system. The interested reader is encouraged to investigate them.^{11,12}

So, assuming a heliocentric model for the solar system, how might we interpret 1 Chronicles 16:30? Here is the passage:

28 Ascribe to the LORD, O families of the peoples, Ascribe to the LORD glory and strength. 29 Ascribe to the LORD the glory due His name; Bring an offering, and come before Him; Worship the LORD in holy array. 30 Tremble before Him, all the earth; Indeed, the world is firmly established, it will not be moved. 31 Let the heavens be glad, and let the earth rejoice; And let them say among the nations, "The LORD reigns."

1 Chronicles 16:28-31 (NASB)

In verse 30, the Hebrew word translated as "world" is *tebel*, which often refers to the "inhabited world."¹³ The Hebrew word translated "established" is *kun* and can also be translated "stable" as in the King James version of the verse. The Hebrew word translated "moved" is *mot*, which can mean to totter, shake, or slip and has also been translated as "falter" or "gives way." Using these alternate definitions, here is another possible rendering of verse 30:

Tremble before Him, all the earth; Indeed, the (inhabited) world is stable, it will not falter.

This rendering would dovetail nicely with the following verses:

For thus saith the LORD that created the heavens; God himself that formed the earth and made it; he hath established it, he created it not in vain, he formed it to be inhabited: I am the LORD; and there is none else.

Isaiah 45:18 (KJV)

While the earth remaineth, seedtime and harvest, and cold and heat, and summer and winter, and day and night shall not cease.

Genesis 8:22 (KJV)

¹⁰ Faulkner D (2016) *The Created Cosmos*, Master Books, Green Forest, AK, 241-255.

¹¹ Carter R, Sarfati J (2017) Why the universe does not revolve around the earth. Refuting absolute geocentrism. <<http://creation.com/refuting-absolute-geocentrism>> Accessed 2017 Sep 05

¹² Lisle J (2008) The universe confirms the Bible. *Taking Back Astronomy*, <<https://answersingenesis.org/answers/books/taking-back-astronomy/the-universe-confirms-the-bible/>> Accessed 2017 Sep 05

¹³ Harris RL, Archer GL, Waltke BK (1980) *Theological Wordbook of the Old Testament*, Moody, Chicago, IL, 835h (Strong's 8398)

In other words, 1 Chronicles 16:30 may be saying that God has made Earth a stable place for its inhabitants without any reference to the planet's motion in space. Such a rendering is within the semantic ranges of the words involved, makes sense in light of other passages, and is in harmony with the current scientific understanding of astronomy and physics. A similar argument can be made about Psalms 96:10.

Then there is Job 38:12-14 (ESV):

Have you commanded the morning since your days began, and caused the dawn to know its place, that it might take hold of the skirts of the earth, and the wicked be shaken out of it? It is changed like clay under the seal, and its features stand out like a garment.

Concerning Job 38:14, John MacArthur writes:²

Documents written on clay tablets were signed using personal engraved seals upon which was written the bearer's name. The Heb. for "changed" is "turned." It conveys the idea that the earth is turned or rotated like a cylindrical seal rolled over the soft clay. Such rolling cylinder seals were found in Babylon. This speaks of the earth, rotating on its axis, an amazing statement that only God could reveal in ancient days. The dawn rolls across the earth as it rotates.

Hence, the heliocentric view of the solar system is in accord with scripture and science.

This issue differs from the debate on the age of the earth. The scriptural evidence for a young earth is unequivocal, overwhelming, and scientific support continues to emerge (dinosaur soft tissue, radiocarbon throughout the fossil record, accelerated nuclear decay, rapid geological processes, etc.). The old earth interpretations put at risk the character of God (cruelty for millions of years before man and sin), the doctrine of original sin (death before the fall), the New Testament writers' understanding of the Flood (global not local), and even the historicity of Genesis 1-11. The issue of the geometry and motion of the earth do not affect any major theological doctrines or history. The center of God's plan and interest is mankind, regardless of the earth's physical form, position, or behavior.

Where scripture has spoken clearly, it has the last word. Taking scripture too literally can sometimes give us clearly inaccurate results: hills don't really sing (Isaiah 55:12), Jesus is not a literal door made out of wood with hinges (John 10:7-9), the earth does not have ends as if it were a flat surface with edges (Job 28:24), etc. Sometimes scripture is written in phenomenological language, an accurate description of how things appear without intent of a complete physical description. Where the meaning of scripture is silent, unclear or equivocal, operational science can be used in a ministerial role. The correct interpretation will always fit the biblical data, obtained from sound exegesis, and the empirical data, gathered by operational science. Rightly dividing the word of truth (2 Timothy 2:15) requires us to discern how a passage was written (narrative

of something else), the author's intent, the language used, etc. May the Lord give us wisdom in this. ❧

ANOTHER REASON TO BELIEVE A BIBLICAL AGE OF THE EARTH

Tissues and biomolecules, including collagen, blood cells, blood vessels, and DNA, are found in dinosaur bone fossils that are alleged to be millions of years old, but chemistry shows that these tissues and molecules could not have been maintained anywhere near that long.

COMING EVENTS

Thursday, October 12, 7:00 pm, Providence Baptist Church, 6339 Glenwood Ave., Raleigh, Room 207

We will discuss the ministerial use of science and apply it to interpreting scriptures dealing with the earth's geometry, motion, and place in the solar system. Then we will watch and discuss two short videos, one on the ice age and the other on the church and creation.